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10/633,160	07/31/2003	Jae Hyun Seo	51876P379	5446

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EXAMINER

MULL, FRED H

ART UNIT	PAPER NUMBER
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3662

DATE MAILED: 02/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/633,160

Applicant(s)

SEO ET AL.

Examiner

Fred H. Mull

Art Unit

3662

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 28 December 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 6-8 is/are rejected.
- 7) ☒ Claim(s) 5 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 11/29/2004.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments on p. 4, with respect to the rejection(s) of claim 6 over 35 USC 112 1<sup>st</sup> Paragraph have been fully considered and are persuasive. The rejection(s) of these claims have been withdrawn.
2. Applicant's arguments on p. 4, with respect to the rejection(s) of claim 1-8 over 35 USC 112 2<sup>nd</sup> Paragraph have been fully considered and are persuasive. The rejection(s) of these claims have been withdrawn.
3. Applicant's arguments on p. 4-7, with respect to the rejection(s) of claims 1-2 and 6-8 over Sim have been fully considered but they are not persuasive.

On p. 6, 2<sup>nd</sup> ¶, applicant argues: "Sim does not teach, disclose or suggest "a beam-forming means for receiving modulated signals of the demodulation means to generate a predetermined number of beamformed signals based on different beam-forming weights in order to steer each of the predetermined number of beamformed signals to a predetermined direction according to the modulated signals."" The examiner disagrees. From the rejection, below, of claim 1:

"beam-forming means (205, Fig. 2; p. 8, line 16) for receiving modulated signals of the demodulation means (204 to 205) to generate a predetermined number of beamformed signals based on different beam-forming weights (p. 11, final ¶, lines 1-10, where the predetermined number is P) in order to steer each of the predetermined

number of beamformed signals to a predetermined direction according to the modulated signals (p. 11, final ¶, lines 10-13); and

beam selection means for selecting one of the predetermined number of beamformed signals based on each predetermined direction of the predetermined number of beamformed signals, wherein the selected beamformed signals has the most desirable direction (p. 3, final ¶; p. 11, final ¶, lines 10-13), where the most desirable direction is the direction having the smallest interference.”

On p. 6, 3<sup>rd</sup> ¶, applicant argues that Sims CDMA system is different from a digital broadcasting receiver. However, CDMA is a digital communications protocol. Sim discloses the digital nature of his receiver (p. 8, 2<sup>nd</sup> ¶). Sim further discloses his receiver receiving broadcasts (p. 8, 3<sup>rd</sup> ¶).

On p. 6, 3<sup>rd</sup> ¶, applicant argues that Sim discloses an array that selects a beam of a signal having the smallest interference, while applicant claims an array that selects a beam by eliminating multipath signals. The examiner notes that only claim 8 claims eliminating multipath. The receiver of Sim does eliminate multipath interference, by equalizing the various paths together into one useful signal (p. 6, ¶ 2-3; p. 8, final ¶ to p. 10). As for selecting a beam of a signal having the smallest interference, the direction having the smallest interference is a perfectly valid criteria for the most desirable direction.

4. Applicant’s arguments on p. 7-8, with respect to the rejection(s) of claims 1-3 and 6-7 over Lo have been fully considered and are persuasive. The rejection(s) of these claims have been withdrawn.

Art Unit: 3662

5. Applicant's arguments on p. 9-10, with respect to the rejection(s) of claims 1 and 4-7 over Rudish have been fully considered and are persuasive. The rejection(s) of these claims have been withdrawn.

6. Applicant's arguments on p. 11-13, with respect to the rejection(s) of claims 1, 3, and 6-7 over Chelouah have been fully considered and are persuasive. The rejection(s) of these claims have been withdrawn.

***35 USC § 112 6<sup>th</sup> Paragraph***

The following is a quotation of the sixth paragraph of 35 U.S.C. 112:

An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

7. Claim(s) 1-8 is/are interpreted by the examiner as invoking 35 USC 112 6<sup>th</sup> paragraph (means plus function). See MPEP § 2181-2186.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1 and 6-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Sim. All citations refer to the English translation of Sim.

In regard to claims 1 and 6-7, Sim discloses:

an array antenna having a plurality of antenna elements for receiving broadcast signals from the digital broadcasting service (Fig. 2);

demodulation means for demodulating the broadcast signals corresponding to each of antenna elements included in the array antenna (p. 8, lines 13-16);

beam-forming means (205, Fig. 2; p. 8, line 16) for receiving modulated signals of the demodulation means (204 to 205) to generate a predetermined number of beamformed signals based on different beam-forming weights (p. 11, final ¶, lines 1-10, where the predetermined number is P) in order to steer each of the predetermined number of beamformed signals to a predetermined direction according to the modulated signals (p. 11, final ¶, lines 10-13); and

beam selection means for selecting one of the predetermined number of beamformed signals based on each predetermined direction of the predetermined number of beamformed signals, wherein the selected beamformed signals has the most desirable direction (p. 3, final ¶; p. 11, final ¶, lines 10-13), where the most desirable direction is the direction having the smallest interference.

In regard to claim 8, Sim further discloses the beam-forming means which eliminates multipath in order to improve equalization performance of the channel equalizer (p. 6, ¶ 2-3; p. 8, final ¶ to p. 10).

1. Claims 6-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Lehne.

In regard to claim 6, Lehne discloses a switched beamforming means for generating a beamformed signal in order to direct a predetermined number of angles by

Art Unit: 3662

applying a beamforming weight to a received signal from the digital broadcasting service and selectively receiving a signal of desired direction; and beam selection means for selectively receiving the signal of desired direction according to a predetermined number of beam forming signals (p. 4, Fig. 3 and the two paragraphs above the Fig.; p. 9, second column, second ¶, lines 2-5). The fact that the signal can be digital can be seen from p. 3, 2<sup>nd</sup> col., 3<sup>rd</sup> ¶, where Lehne discloses that the principles taught are valid for GSM, CDMA, IS-95, and UMTS, which are all digital signal standards.

In regard to claim 7, Lehne further discloses beamforming means for generating a predetermined number of beamformed signals by applying beamforming weights in order to steer the beam to a predetermined direction to receive a digital broadcasting signals; wherein the predetermined number of beam forming signals are generated by the beam forming means (p. 4, Fig. 3 and the two paragraphs above the Fig.; p. 9, second column, second ¶, lines 2-5).

In regard to claim 8, Lehne further discloses the beamforming means outputs a signal by eliminating multipath receiving signals to a channel equalizer to improve equalization performance of the channel equalizer (p. 5, 2<sup>nd</sup> col., 1<sup>st</sup> ¶; p. 10, 3<sup>rd</sup> ¶).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

Art Unit: 3662

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sim, as applied to claim 1, in further view of either of Rhodes or Izzat.

Sim discloses that his broadcasting system has a cellular structure (p. 4, 1<sup>st</sup> ¶).

Sim fails to disclose his antenna is a predetermined number of axis linear arrays.

Rhodes (Fig. 18; ¶ 117) and Izzat (Fig. 10; ¶ 35) disclose known cellular base station arrangements where each antenna has a separate axis linear array for each sector of a cell.

It would have been obvious to use this known cellular base station arrangement in the cellular broadcast system of Sim.

3. Claims 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sim, as applied to claim 1, in further view of IDS document Cranor.

Sim fails to disclose the use of circular or planar antenna arrays. However, Sim does disclose his antenna needs to deal with multipath (p. 6, ¶ 2).

Cranor discloses the use of circular (Fig. 3A) and planar (p. 7, lines 26-28) antenna arrays. Cranor teaches that these antennas are particularly well suited for use in an urban environment where signal strength is of less concern than multipath distortion.

It would have been obvious to use the circular and planar antennas of Cranor in the system of Sim



Art Unit: 3662

4. Claims 1 and 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Paila in view of Sim, as applied to claims 1 and 6-8, above.

Paila discloses a digital broadcasting network that can broadcast using CDMA (§ 39).

It would have been obvious to use the known CDMA system of Sim as the CDMA system to broadcast the digital broadcasting network signals of Paila.

5. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Paila in view of either of Rhodes or Izzat, as applied to claim 2, above.

Paila discloses a digital broadcasting network that can broadcast using CDMA (§ 39).

It would have been obvious to use the known CDMA system of Sim as the CDMA system to broadcast the digital broadcasting network signals of Paila.

6. Claims 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Paila in view of Sim and Cranor, as applied to claims 3-4, above.

Paila discloses a digital broadcasting network that can broadcast using CDMA (§ 39).

It would have been obvious to use the known CDMA system of Sim as the CDMA system to broadcast the digital broadcasting network signals of Paila.

Art Unit: 3662

7. The examiner also finds the following reference(s) relevant:

English translation of KR 1020020037965 A.

Applicant is encouraged to consider these documents in formulating their response (if one is required) to this action, in order to expedite prosecution of this application.

***Allowable Subject Matter***

8. Claim(s) 5 is/are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

Art Unit: 3662

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fred H. Mull whose telephone number is 703-305-1250. The examiner can normally be reached on M-F 9:00 - 5:00.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas H. Tarcza can be reached on 703-360-4171. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Effective approximately April 5, 2005, the following new telephone numbers will be in effect: Fred H. Mull: 571-272-6975, Thomas H. Tarcza: 571-272-6979.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Fred H. Mull  
Examiner  
Art Unit 3662

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